

NON-PUBLIC?: N
ACCESSION #: 9111060336
LICENSEE EVENT REPORT (LER)

FACILITY NAME: TURKEY POINT UNIT 3 PAGE: 1 OF 3

DOCKET NUMBER: 05000250

TITLE: Manual Reactor Trip Following Loss of Main Turbine Generator Load
Due to a Mechanical Failure of a Piping Nipple Control Oil System
EVENT DATE: 10/03/91 LER #: 91-008-00 REPORT DATE: 11/01/91

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 050

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
10 CFR 50.73(a)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: David Powell, Superintendent of TELEPHONE: (305) 246-6559
Licensing

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: TG COMPONENT: PSF MANUFACTURER: W120
REPORTABLE NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On October 3, 1991, at 1200 EDT, with Unit 3 at 50 percent power and Unit 4 in Mode 6 (Refueling) the Unit 3 reactor was tripped manually due to a loss of main turbine generator load. The unit was stabilized in Mode 3 (Hot Standby) with steam generator water levels being maintained by the Main Feedwater System and steam being dumped through the atmospheric dump valves. An Event Response Team was formed to determine the cause of this event and to recommend applicable corrective actions. As part of this investigation, a pipe break was discovered in the control oil piping to the North-East Intercept valve. Examination of the break area indicated the cause of the pipe break to be fatigue failure at the root of the pipe nipple at the control orifice. The fatigue was caused by pipe vibration. A significant contributor to the vibration was a spring-can support for the low pressure steam line that had one of the compression nuts restraining spring-can movement. The broken pipe was repaired and the

spring retainers have been removed from the spring-cans. The nipples upstream of the other three Unit 3 intercept valves will be replaced during the next refueling outage. The supports for the control oil piping on both units will be modified to prevent excessive vibration. The Unit 4 nipples upstream of the intercept valves were replaced and the removed nipples inspected for fatigue damage. No fatigue damage was found.

END OF ABSTRACT

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I. EVENT DESCRIPTION

On October 3, 1991, at 1200 EDT, with Unit 3 at 50 percent power and Unit 4 in Mode 6 (Refueling), the control room operators saw the turbine generator load decrease from approximately 323 megawatts to approximately 3 megawatts without a turbine runback or other cause indicated.

The operator tripped the Unit 3 reactor manually due to the loss of main turbine generator load. The operator then stabilized the unit in Mode 3 (Hot Standby) in accordance with approved plant procedures. The steam generator water levels were maintained by the Main Feedwater System and steam was dumped through the atmospheric dump valves. The first safety valve off the "A" Steam Generator opened momentarily and reseated itself.

II. EVENT CAUSE

A. Immediate Cause

The turbine intercept valves and the turbine main control valves are opened by turbine oil pressure and closed by spring action upon loss of turbine oil pressure. A loss of turbine control oil caused the turbine intercept valves and the turbine main control valves to close. With the resulting reduced steam flow to the turbines, the generator was unable to maintain its load. This resulted in the turbine load dropping to approximately 3 megawatts.

B. Root Cause

An Event Response Team was formed to determine the cause of this event and to recommend applicable corrective actions. As part of this investigation, a pipe break in the control oil

piping to the North-East Intercept valve was discovered. Examination of the break area indicated the cause of the pipe break to be fatigue failure at the root of the pipe nipple at the control orifice. The fatigue was caused by the vibration of the pipe in conjunction with the support scheme of the piping. A significant contributor to the vibration was a spring-can support for the low pressure steam line adjacent to the North-East intercept valve. The spring-can support was found to have one of the compression nuts restraining spring-can movement. Interviews with inspectors and engineers involved with the system have shown that the spring compression nut was backed off following work on the steam lines. Thus the investigators concluded that the nut worked its way down due to the normal turbine vibrations. (Note: The compression nut and the all-thread were replaced during the just completed dual unit outage.)

III. EVENT SAFETY ANALYSIS

A manual reactor trip from 50 percent power is a previously analyzed event. As a result of these analyses, plant procedures were developed to provide operator guidance in responding to the transient conditions produced and to assure that the plant is stabilized in a safe condition in accordance with the plant

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Technical Specifications. The unit was stabilized in Mode 3 in accordance with these approved plant procedures.

A post-trip review was conducted to assess the proper operation of safety related equipment. This review established that plant parameters responded as expected. Other than the manual initiation of the reactor trip, there were no manual or automatic reactor protection system or engineered safety feature actuations. One Code Safety Valve on the 3A steam generator responded as designed.

Based on the above, the health and safety of the public were not adversely affected.

IV. CORRECTIVE ACTIONS

1. Immediate Corrective Actions

The broken pipe was repaired. The control oil piping joints at the orifice blocks to all four intercept valves and the eight

accessible joints to the intercept valves were verified leaktight. The spring-can compression nut was backed off allowing normal travel of the spring-can.

2. Corrective Actions to Prevent Recurrence

A. Mechanical Maintenance replaced the pipe nipples upstream of each orifice block on the Unit 4 intercept valves.

B. The removed nipples were inspected for signs of fatigue. No signs of fatigue were found.

C. The same nipples in Unit 3 will be replaced during the next refueling outage.

D. To reduce vibration, additional supports are being provided for the turbine control oil piping on both Unit 3 and Unit 4. Some of the Unit 4 additional supports are scheduled to be installed by November 30, 1991, with others scheduled to be replaced during the next Unit 4 refueling outage. The Unit 3 additional supports will be installed prior to the end of the next Unit 3 refueling outage.

E. To prevent the compression nuts on the spring-cans from vibrating down and potentially restraining the actions of the spring-cans, the spring retainers have been removed from the spring-cans.

V. ADDITIONAL INFORMATION

1. Similar LERs: None

2. Additional Information:

Component Failure: Pipe nipple in Control Oil System

Component Manufacturer/Vendor: Westinghouse

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P.O. Box 029100, Miami, FL, 33102-9100

FPL

NOV 01, 1991
L-91-270
10 CFR 50.73

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 91-008-00
Date of Event: October 3, 1991
Manual Reactor Trip Following Loss of Main Turbine
Generator Load Due to a Mechanical Failure of a Piping
Nipple in the Control Oil System

The attached Licensee Event Report 250-91-008-00 is being provided in accordance with the requirements of 10 CFR 50.73(a)(2)(iv) to provide notification of the subject event.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Nuclear

TFP/DPS/ds

enclosures

cc: Stewart D. Ebnetter, Regional Administrator, Region II,
USNRC,
Senior Resident Inspector, USNRC, Turkey Point Plant

an FPL Group Company

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